

Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: Zheng W, McLerran DF, Rolland B, et al. Association between body-mass index and risk of death in more than 1 million Asians. *N Engl J Med* 2011;364:719-29.

Supplementary Materials

Association between Body-Mass Index and Risk of Death in More Than 1 Million Asians Wei Zheng, et al.

Authors' contributions

Wei Zheng, Paolo Boffetta, and John Potter developed the concept and the plan for this project. Dale McLerran managed the pooled dataset and performed the statistical analysis in collaboration with Mark Thornquist and Ziding Feng. Betsy Rolland coordinated the project. Manami Inoue and Keitaro Matsuo coordinated the Japanese cohort studies. Daehee Kang and John Potter coordinated the Asia Cohort Consortium. Wei Zheng drafted the data analysis plan and the manuscript with significant contributions from Dale McLerran, Betsy Rolland, Xianglan Zhang, Ziding Feng, Paolo Boffetta, and John Potter. All other authors have conducted the original cohorts, provided data for the pooled analysis, and/or assisted in the data management. All authors reviewed and approved the final version of the manuscript.

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Table S1. Hazard ratios (HR) for the association between BMI and total mortality by major study populations: The Asia Cohort Consortium BMI Project (males only)

	Body mass index (BMI) at baseline									
	≤15.0	15.1-17.5	17.6-20.0	20.1-22.5	22.6-25.0	25.1-27.5	27.6-30.0	30.1-32.5	32.6-35.0	35.1-50.0
All subjects^a										
East Asian										
No. of deaths	181	2102	8624	14,072	12,943	6127	2265	671	169	91
HR (95% CI) ^b	2.78 (1.76,4.42)	1.94 (1.71,2.20)	1.40 (1.28,1.52)	1.13 (1.08,1.18)	1.00 (reference)	0.97 (0.93,1.00)	1.05 (1.00,1.11)	1.21 (1.09,1.34)	1.63 (1.38,1.93)	1.54 (1.23,1.93)
Indian & Bangladeshi										
No. of deaths	403	1545	2206	2142	1530	764	288	109	34	23
HR (95% CI) ^b	2.23 (1.74,2.85)	1.63 (1.39,1.91)	1.27 (1.10,1.47)	1.10 (0.95,1.27)	1.00 (reference)	0.98 (0.81,1.18)	0.99 (0.75,1.31)	1.14 (0.74,1.75)	1.23 (0.58,2.61)	1.70 (0.69,4.20)
Ever smokers^a										
East Asian										
No. of deaths	135	1664	6829	10,856	9429	4245	1465	407	99	57
HR (95% CI) ^b	2.50 (1.62,3.86)	1.86 (1.67,2.07)	1.39 (1.29,1.50)	1.15 (1.10,1.19)	1.00 (reference)	0.97 (0.93,1.01)	1.03 (0.97,1.09)	1.18 (1.06,1.32)	1.56 (1.19,2.04)	1.70 (1.28,2.26)
Indian & Bangladeshi										
No. of deaths	246	1007	1247	1045	663	312	114	40	8	5
HR (95% CI) ^b	2.02 (1.45,2.80)	1.59 (1.27,1.99)	1.25 (1.01,1.55)	1.14 (0.92,1.41)	1.00 (reference)	1.00 (0.74,1.34)	1.00 (0.64,1.55)	1.16 (0.57,2.35)	NA	NA
Lifetime nonsmokers^a										
East Asian										
No. of deaths	44	379	1504	2708	3076	1680	731	248	66	25
HR (95% CI) ^b	2.99 (2.14,4.17)	1.82 (1.44,2.29)	1.22 (1.05,1.42)	0.99 (0.93,1.05)	1.00 (reference)	0.99 (0.92,1.07)	1.19 (1.06,1.34)	1.58 (1.21,2.07)	2.30 (1.65,3.20)	1.59 (1.03,2.45)
Indian & Bangladeshi										
No. of deaths	157	538	959	1097	867	452	174	69	26	18
HR (95% CI) ^b	2.37 (1.62,3.45)	1.55 (1.22,1.98)	1.23 (1.01,1.52)	1.06 (0.87,1.29)	1.00 (reference)	0.97 (0.75,1.24)	1.01 (0.71,1.45)	1.15 (0.67,1.98)	1.46 (0.62,3.45)	2.33 (0.11,48.1)

^a Included in the analysis were all subjects / ever smokers / lifetime nonsmokers from India and Bangladesh (125,706 / 53,672 / 72,034), and East Asian (341,359 / 237,290 / 97,315)

^b Adjusted for age, gender, education, urban/rural resident, marital status, and baseline comorbidities and excluding subjects with less than three years of follow-up.

Table S2. Hazard ratios (HR) for the association between BMI and total mortality by major study populations: The Asia Cohort Consortium BMI Project (females only)

	Body mass index (BMI) at baseline									
	≤15.0	15.1-17.5	17.6-20.0	20.1-22.5	22.6-25.0	25.1-27.5	27.6-30.0	30.1-32.5	32.6-35.0	35.1-50.0
All subjects^a										
East Asian										
No. of deaths	275	1693	4923	7128	8448	4882	2414	952	315	192
HR (95% CI) ^b	2.34 (1.77,3.11)	1.74 (1.53,1.98)	1.28 (1.18,1.39)	1.03 (0.98,1.09)	1.00 (reference)	1.00 (0.95,1.06)	1.07 (1.00,1.15)	1.19 (1.06,1.34)	1.40 (1.19,1.64)	1.52 (1.27,1.83)
Indian & Bangladeshi										
No. of deaths	352	867	1134	1054	819	505	249	124	30	34
HR (95% CI) ^b	1.99 (1.51,2.63)	1.55 (1.25,1.92)	1.23 (1.01,1.51)	1.08 (0.88,1.32)	1.00 (reference)	0.98 (0.77,1.25)	0.89 (0.65,1.22)	0.97 (0.64,1.47)	0.66 (0.30,1.48)	1.09 (0.51,2.31)
Ever smokers^a										
East Asian										
No. of deaths	56	326	761	881	1021	488	257	124	28	25
HR (95% CI) ^b	2.07 (1.02,4.20)	1.50 (1.17,1.93)	1.20 (1.04,1.38)	1.02 (0.92,1.13)	1.00 (reference)	0.94 (0.83,1.06)	0.89 (0.76,1.04)	1.18 (0.95,1.45)	1.03 (0.68,1.58)	1.64 (0.94,2.84)
Indian & Bangladeshi										
No. of deaths	21	48	30	22	15	6	2	1	1	0
HR (95% CI) ^b	1.43 (0.25,8.20)	1.37 (0.30,6.34)	0.75 (0.15,3.74)	0.88 (0.16,4.96)	1.00 (reference)	NA	NA	NA	NA	NA
Lifetime nonsmokers^a										
East Asian										
No. of deaths	203	1239	3776	5658	6849	4024	1982	769	259	154
HR (95% CI) ^b	2.36 (1.02,2.77)	1.72 (1.53,1.94)	1.26 (1.16,1.37)	1.02 (0.97,1.09)	1.00 (reference)	1.00 (0.94,1.07)	1.08 (1.01,1.15)	1.18 (1.05,1.33)	1.41 (1.20,1.65)	1.64 (1.30,2.07)
Indian & Bangladeshi										
No. of deaths	331	819	1104	1031	804	499	247	123	29	34
HR (95% CI) ^b	2.01 (1.51,2.68)	1.54 (1.24,1.92)	1.25 (1.02,1.53)	1.08 (0.88,1.32)	1.00 (reference)	0.98 (0.77,1.26)	0.90 (0.66,1.23)	0.97 (0.64,1.48)	0.65 (0.29,1.47)	1.10 (0.52,2.34)

^a Included in the analysis were all subjects / ever smokers / lifetime nonsmokers from India and Bangladesh (139,330 / 1763 / 137,562) and East Asian (438,178/ 32,755/ 382,177)

^b Adjusted for age, gender, education, urban/rural resident, marital status, and baseline comorbidities and excluding subjects with less than three years of follow-up.

Table S3. Hazard ratios (HR) for the association between BMI and cause-specific mortality by major study populations: The Asia Cohort Consortium BMI Project (ever-smokers only)

	Body mass index (BMI) at baseline							
	≤17.5	17.6-20.0	20.1-22.5	22.6-25.0	25.1-27.5	27.6-30.0	30.1-32.5	>32.5
CVD mortality								
East Asian ^a								
No. of deaths	646	2057	3090	3012	1445	542	189	73
HR (95% CI) ^b	1.41 (1.20,1.65)	1.14 (1.03,1.26)	1.01 (0.95,1.07)	1.00 (reference)	1.01 (0.92,1.11)	1.04 (0.93,1.16)	1.28 (1.09,1.51)	1.46 (1.04,2.04)
Indian & Bangladeshi ^a								
No. of deaths	332	432	440	318	142	53	17	7
HR (95% CI) ^b	0.93 (0.64,1.34)	0.96 (0.69,1.35)	1.01 (0.72,1.40)	1.00 (reference)	0.95 (0.60,1.48)	0.94 (0.48,1.84)	1.18 (0.38,3.64)	0.94 (0.16,5.54)
Cancer mortality								
East Asian ^a								
No. of deaths	524	2450	4158	3585	1493	541	151	62
HR (95% CI) ^b	1.32 (1.16,1.49)	1.31 (1.20,1.43)	1.15 (1.09,1.21)	1.00 (reference)	0.93 (0.86,1.00)	1.02 (0.92,1.14)	1.14 (0.95,1.37)	1.53 (1.11,2.11)
Indian & Bangladeshi ^a								
No. of deaths	147	153	114	63	37	11	6	1
HR (95% CI) ^b	1.91 (0.94,3.88)	1.55 (0.78,3.08)	1.29 (0.63,2.63)	1.00 (reference)	1.22 (0.47,3.20)	1.26 (0.30,5.22)	2.43 (0.38,15.54)	NA
Other mortality								
East Asian ^a								
No. of deaths	881	2458	3366	2767	1211	434	133	66
HR (95% CI) ^b	2.76 (2.38,3.19)	1.70 (1.55,1.85)	1.24 (1.14,1.35)	1.00 (reference)	0.96 (0.89,1.04)	0.99 (0.89,1.11)	1.12 (0.90,1.39)	1.85 (1.28,2.68)
Indian & Bangladeshi ^a								
No. of deaths	931	778	574	336	160	61	19	7
HR (95% CI) ^b	2.39 (1.78,3.20)	1.50 (1.12,2.02)	1.23 (0.91,1.67)	1.00 (reference)	0.99 (0.65,1.51)	1.00 (0.54,1.87)	1.13 (0.40,3.15)	1.05 (0.20,5.48)

^aIncluded in the analysis were ever smokers in the groups of Indian and Bangladeshi (n=56,250) and East Asian (n=244,267).

^b Adjusted for age, gender, education, urban/rural resident, marital status, and baseline comorbidities, and excluding subjects with less than three years of follow-up.

Table S4. Hazard ratios (HR) for the association between BMI and cause-specific mortality by major study populations: The Asia Cohort Consortium BMI Project (lifetime nonsmokers only)

	Body mass index (BMI) at baseline							
	≤17.5	17.6-20.0	20.1-22.5	22.6-25.0	25.1-27.5	27.6-30.0	30.1-32.5	>32.5
CVD mortality								
East Asian ^a								
No. of deaths	611	1727	2468	3043	1688	837	342	191
HR (95% CI) ^b	1.51 (1.36,1.67)	1.16 (0.98,1.36)	0.97 (0.89,1.05)	1.00 (reference)	0.98 (0.92,1.05)	1.08 (0.98,1.19)	1.34 (1.10,1.62)	1.56 (1.32,1.84)
Indian & Bangladeshi ^a								
No. of deaths	456	667	836	683	426	181	84	41
HR (95% CI) ^b	1.02 (0.78,1.35)	1.01 (0.79,1.29)	1.02 (0.81,1.28)	1.00 (reference)	1.07 (0.81,1.41)	0.99 (0.68,1.44)	1.10 (0.66,1.84)	1.04 (0.51,2.10)
Cancer mortality								
East Asian ^a								
No. of deaths	304	1218	2330	2948	1697	786	284	131
HR (95% CI) ^b	1.17 (1.01,1.35)	1.01 (0.93,1.09)	0.95 (0.90,1.01)	1.00 (reference)	1.04 (0.97,1.11)	1.16 (1.06,1.27)	1.28 (1.10,1.50)	1.48 (1.22,1.80)
Indian & Bangladeshi ^a								
No. of deaths	108	161	176	179	93	40	17	5
HR (95% CI) ^b	0.91 (0.52,1.59)	0.88 (0.54,1.45)	0.83 (0.52,1.33)	1.00 (reference)	0.87 (0.49,1.55)	0.74 (0.34,1.65)	0.70 (0.21,2.32)	0.43 (0.05,3.77)
Other mortality								
East Asian ^a								
No. of deaths	843	1897	2552	2731	1462	700	261	131
HR (95% CI) ^b	2.76 (2.23,3.42)	1.54 (1.34,1.76)	1.12 (1.01,1.24)	1.00 (reference)	0.98 (0.88,1.10)	1.10 (0.95,1.26)	1.17 (0.98,1.41)	1.47 (1.10,1.96)
Indian & Bangladeshi ^a								
No. of deaths	1438	1365	1275	911	493	227	103	67
HR (95% CI) ^b	2.24 (1.84,2.72)	1.46 (1.20,1.77)	1.15 (0.95,1.40)	1.00 (reference)	0.93 (0.73,1.20)	0.95 (0.69,1.32)	1.03 (0.65,1.63)	1.21 (0.69,2.13)

^aIncluded in the analysis were lifetime nonsmokers in the groups of Indian and Bangladeshi (n=211,646) and East Asian (n=415,166).

^bAdjusted for age, gender, education, urban/rural resident, marital status, and baseline comorbidities, and excluding subjects with less than three years of follow-up.

Figure S1. Hazard ratios (HR) for the association between BMI and mortality due to respiratory diseases, by smoking status, the Asia Cohort Consortium BMI project. Two figures are presented for each population (A and C for East Asians; B and D for Indians/Bangladeshis), one with and one without confidence interval bars. HRs were adjusted for age, gender, education, urban/rural resident, marital status, and baseline comorbidities and excluding subjects with less than three years of follow-up.

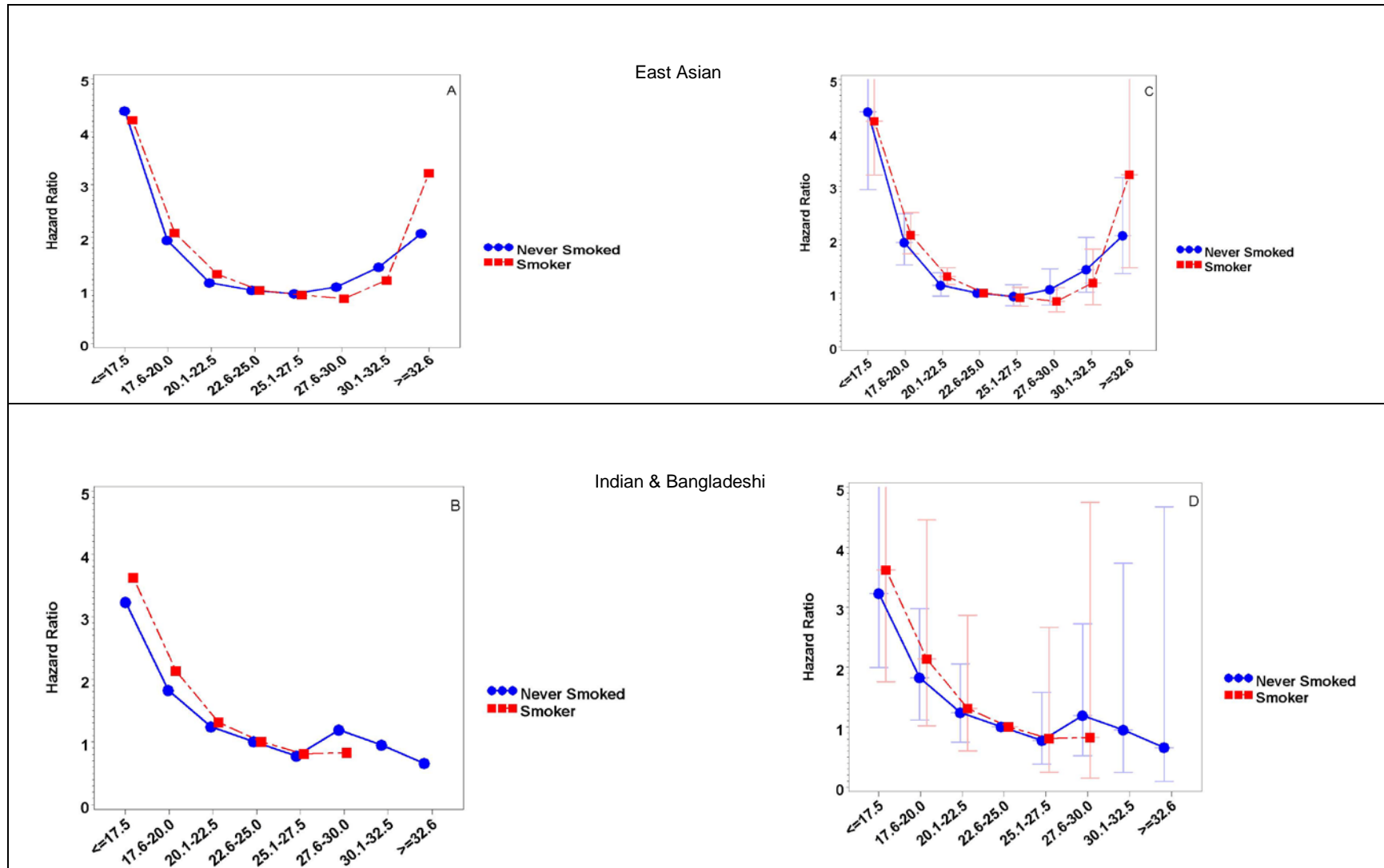


Table S5. Associations between BMI and total and cause-specific mortality: Comparison of results between the ACC and the study of Jee et al. (male never-smokers)

	Body mass index (BMI) at baseline									
	<18.5	18.5-19.9	20.0-21.4	21.5-22.9	23.0-24.9	25.0-26.4	26.5-27.9	28.0-29.9	30.0-31.9	≥32.0
Total Mortality										
East Asian ^c										
No. of deaths	859	1194	1737	2010	2565	1253	808	559	231	138
HR (95% CI) ^a	1.54 (1.29,1.83)	1.23 (1.06,1.43)	1.07 (0.98,1.17)	1.00 (0.94,1.07)	1.00 (reference)	0.98 (0.91,1.05)	1.05 (0.96,1.15)	1.19 (1.03,1.37)	1.51 (1.19,1.90)	1.75 (1.41,2.17)
Indian & Bangladeshi ^c										
No. of deaths	951	790	876	815	861	369	256	157	80	68
HR (95% CI) ^a	1.45 (1.18,1.78)	1.24 (1.00,1.54)	1.12 (0.91,1.37)	1.04 (0.85,1.29)	1.00 (reference)	0.88 (0.68,1.16)	1.05 (0.77,1.42)	0.97 (0.67,1.41)	1.17 (0.71,1.93)	1.58 (0.92,2.72)
Jee et al ^b										
No. of deaths	414	812	1423	1912	2568	1308	697	370	111	42
HR (95% CI) ^a	1.3 (1.2,1.4)	1.1 (1.0,1.2)	1.0 (1.0,1.1)	1.0 (0.9,1.1)	1.0 (reference)	1.0 (0.9,1.1)	1.1 (1.0,1.2)	1.1 (1.0,1.3)	1.5 (1.3,1.9)	2.5 (1.8,3.5)
Cancer Mortality										
East Asian										
No. of deaths	171	274	482	580	727	327	227	153	63	43
HR (95% CI) ^a	1.11 (0.89,1.38)	1.04 (0.83,1.30)	1.03 (0.90,1.17)	1.00 (0.89,1.13)	1.00 (reference)	0.95 (0.82,1.10)	1.12 (0.95,1.33)	1.28 (1.06,1.56)	1.53 (1.14,2.03)	2.37 (1.68,3.34)
Indian & Bangladeshi ^c										
No. of deaths	51	37	48	60	62	23	13	14	5	2
HR (95% CI) ^a	1.05 (0.46,2.42)	0.81 (0.33,1.98)	0.85 (0.37,1.96)	1.06 (0.48,2.31)	1.00 (reference)	0.77 (0.27,2.21)	0.75 (0.20,2.81)	1.25 (0.35,4.46)	NA	NA
Jee et al ^b										
No. of deaths	101	263	475	627	899	495	255	133	41	14
HR (95% CI) ^a	0.9 (0.7,1.2)	1.1 (0.9,1.2)	1.1 (0.9,1.1)	1.0 (0.9,1.1)	1.0 (reference)	1.1 (1.0,1.2)	1.2 (1.0,1.3)	1.2 (1.0,1.5)	1.7 (1.2,2.3)	2.5 (1.4,4.3)
CVD Mortality										
East Asian										
No. of deaths	286	396	551	629	857	453	282	217	87	57
HR (95% CI) ^a	1.17 (0.86,1.59)	1.10 (0.85,1.41)	0.99 (0.82,1.19)	0.93 (0.81,1.07)	1.00 (reference)	1.06 (0.93,1.20)	1.08 (0.93,1.25)	1.26 (1.07,1.49)	1.97 (1.19,3.25)	1.75 (1.30,2.37)

Indian & Bangladeshi ^c										
No. of deaths	259	254	316	301	337	168	108	67	39	23
HR (95% CI) ^a	0.97 (0.68,1.39)	0.99 (0.69,1.42)	1.01 (0.72,1.42)	0.97 (0.69,1.37)	1.00 (reference)	1.03 (0.68,1.55)	1.13 (0.70,1.82)	1.09 (0.61,1.94)	1.50 (0.72,3.11)	1.41 (0.56,3.59)
Jee et al ^b										
No. of deaths	48	120	249	312	526	254	175	102	33	15
HR (95% CI) ^a	0.7 (0.5,0.9)	0.8 (0.6,1.0)	0.9 (0.7,1.0)	0.8 (0.7,0.9)	1.0 (reference)	0.9 (0.8,1.1)	1.3 (1.1,1.6)	1.5 (1.2,1.9)	2.1 (1.5,3.0)	4.1 (2.4,7.2)

Respiratory Disease Mortality

East Asian										
No. of deaths	125	122	153	171	187	79	59	27	13	7
HR (95% CI) ^a	2.73 (2.04,3.65)	1.85 (1.24,2.76)	1.18 (0.92,1.50)	1.06 (0.84,1.33)	1.00 (reference)	0.95 (0.70,1.28)	1.35 (0.97,1.88)	1.07 (0.67,1.72)	2.03 (0.95,4.34)	1.96 (0.70,5.47)
Indian & Bangladeshi ^c										
No. of deaths	113	91	70	53	43	21	8	7	3	3
HR (95% CI) ^a	2.99 (1.37,6.53)	2.59 (1.16,5.77)	1.70 (0.74,3.91)	1.33 (0.55,3.24)	1.00 (reference)	1.02 (0.32,3.20)	0.71 (0.13,3.80)	0.94 (0.16,5.49)	NA	NA
Jee et al ^b										
No. of deaths	70	73	71	69	64	25	14	2	1	0
HR (95% CI) ^a	6.0 (4.2,8.7)	3.2 (2.3,4.6)	1.8 (1.3,2.6)	1.4 (1.0,2.0)	1.0 (reference)	0.7 (0.4,1.2)	0.7 (0.4,1.4)	0.2 (0.1,0.9)	NA	NA

^a Adjusted for age, alcohol use, and baseline comorbid conditions and excluded subjects with a BMI < 16 Kg/m² or height ≤ 130cm and subjects with < 2 years of follow-up

^b Jee SH et al. Body-mass index and mortality in Korean men and women. N Engl J Med 2006; 355:779-87

^c East Asians include Chinese, Koreans and Japanese. South Asians include Indians and Bangladeshis.

Table S6. Associations between BMI and total and cause-specific mortality: Comparison of results between the ACC and the study of Jee et al. (male ever-smokers)

	Body mass index (BMI) at baseline									
	<18.5	18.5-19.9	20.0-21.4	21.5-22.9	23.0-24.9	25.0-26.4	26.5-27.9	28.0-29.9	30.0-31.9	≥32.0
Total Mortality										
East Asian ^c										
No. of deaths	3705	5218	6992	7268	7608	3176	1901	1078	381	206
HR (95% CI) ^a	1.75 (1.55,1.96)	1.42 (1.33,1.51)	1.21 (1.01,1.27)	1.12 (1.08,1.17)	1.00 (reference)	0.96 (0.92,1.01)	1.03 (0.97,1.09)	1.04 (0.97,1.11)	1.17 (1.03,1.33)	1.52 (1.30,1.77)
Indian & Bangladeshi ^c										
No. of deaths	1571	882	854	668	632	271	156	107	41	23
HR (95% CI) ^a	1.50 (1.22,1.85)	1.24 (0.99,1.55)	1.21 (0.97,1.52)	1.08 (0.85,1.37)	1.00 (reference)	0.97 (0.71,1.33)	0.99 (0.67,1.46)	1.02 (0.65,1.60)	1.05 (0.52,2.11)	0.92 (0.37,2.30)
Jee et al ^b										
No. of deaths	3247	5679	9318	10,106	11,418	4996	2399	1094	288	110
HR (95% CI) ^a	1.4 (1.3,1.4)	1.2 (1.1,1.2)	1.2 (1.1,1.2)	1.1 (1.1,1.1)	1.0 (reference)	1.0 (0.9,1.0)	1.0 (0.9,1.0)	1.0 (1.0,1.1)	1.1 (1.0,1.3)	2.1 (1.7,2.5)
Cancer Mortality										
East Asian										
No. of deaths	1053	1725	2482	2529	2581	1012	580	339	113	53
HR (95% CI) ^a	1.44 (1.28,1.63)	1.36 (1.24,1.49)	1.22 (1.15,1.30)	1.12 (1.06,1.19)	1.00 (reference)	0.95 (0.87,1.03)	0.99 (0.90,1.09)	1.08 (0.95,1.23)	1.13 (0.87,1.46)	1.46 (1.08,1.97)
Indian & Bangladeshi										
No. of deaths	185	101	81	58	64	21	25	9	5	1
HR (95% CI) ^a	1.51 (0.79,2.88)	1.24 (0.61,2.51)	1.02 (0.48,2.16)	0.91 (0.41,2.03)	1.00 (reference)	0.80 (0.27,2.39)	1.65 (0.59,4.62)	1.05 (0.22,4.96)	NA	NA
Jee et al ^b										
No. of deaths	1064	2034	3600	3993	4689	2016	984	417	112	37
HR (95% CI) ^a	1.1 (1.0,1.2)	1.1 (1.0,1.1)	1.1 (1.1,1.2)	1.0 (1.0,1.1)	1.0 (reference)	0.9 (0.9,1.0)	1.0 (0.9,1.0)	1.0 (0.9,1.1)	1.1 (0.9,1.3)	1.6 (1.2,2.3)
CVD Mortality										
East Asian										
No. of deaths	971	1324	1778	1899	2095	899	596	314	126	76
HR (95% CI) ^a	1.36 (1.12,1.65)	1.17 (1.05,1.30)	1.09 (1.01,1.17)	1.05 (0.98,1.13)	1.00 (reference)	0.99 (0.90,1.09)	1.13 (0.02,1.25)	1.07 (0.94,1.22)	1.26 (.103,1.53)	1.84 (1.40,2.42)

Indian & Bangladeshi										
No. of deaths	434	281	320	271	276	119	59	46	17	10
HR (95% CI) ^a	0.89 (0.63,1.25)	0.89 (0.61,1.28)	1.02 (0.72,1.46)	0.98 (0.68,1.43)	1.00 (reference)	1.01 (0.63,1.62)	0.89 (0.48,1.65)	1.03 (0.51,2.06)	1.14 (0.38,3.40)	1.11 (0.28,4.45)
Jee et al ^b										
No. of deaths	447	882	1472	1742	2201	1040	520	256	68	24
HR (95% CI) ^a	0.9 (0.7,0.9)	0.9 (0.8,0.9)	0.9 (0.9,1.0)	1.0 (0.9,1.0)	1.0 (reference)	1.1 (1.0,1.2)	1.1 (1.0,1.2)	1.3 (1.1,1.5)	1.4 (1.1,1.8)	2.4 (1.6,3.6)

Respiratory Disease Mortality

East Asian										
No. of deaths	558	601	658	650	585	207	99	57	22	16
HR (95% CI) ^a	3.24 (2.63,3.98)	2.01 (1.76,2.28)	1.44 (1.27,1.74)	1.24 (1.09,1.40)	1.00 (reference)	0.95 (0.76,1.17)	0.86 (0.67,1.10)	0.97 (0.70,1.34)	1.43 (0.89,2.30)	3.16 (1.55,6.47)
Indian & Bangladeshi										
No. of deaths	259	107	79	52	44	19	5	6	0	0
HR (95% CI) ^a	2.93 (1.40,6.11)	2.03 (0.92,4.50)	1.56 (0.69,3.55)	1.21 (0.50,2.93)	1.00 (reference)	0.99 (0.30,3.25)	NA	NA	NA	NA
Jee et al ^b										
No. of deaths	399	390	449	347	311	115	33	5	4	0
HR (95% CI) ^a	4.5 (3.8,5.3)	2.4 (2.1,2.9)	2.0 (1.7,2.3)	1.4 (1.2,1.6)	1.0 (reference)	0.8 (0.7,1.0)	0.5 (0.3,0.7)	0.2 (0.1,0.4)	NA	NA

^a Adjusted for age, alcohol use, and baseline comorbid conditions and excluded subjects with a BMI < 16 Kg/m² or height ≤ 130cm and subjects with < 2 years of follow-up

^b Jee SH et al. Body-mass index and mortality in Korean men and women. N Engl J Med 2006; 355:779-87

^c East Asians include Chinese, Koreans and Japanese. South Asians include Indians and Bangladeshis.

Table S7. Associations between BMI and total and cause-specific mortality: Comparison of results between the ACC and the study of Jee et al. (female never-smokers)

	Body mass index (BMI) at baseline									
	<18.5	18.5-19.9	20.0-21.4	21.5-22.9	23.0-24.9	25.0-26.4	26.5-27.9	28.0-29.9	30.0-31.9	≥32.0
Total Mortality										
East Asian^c										
No. of deaths	2353	2677	3642	4153	5860	2882	2043	1530	700	551
HR (95% CI) ^a	1.55 (1.40,1.72)	1.23 (1.11,1.36)	1.04 (0.96,1.13)	1.02 (0.97,1.06)	1.00 (reference)	0.99 (0.93,1.06)	1.05 (0.98,1.12)	1.05 (0.99,1.12)	1.18 (1.05,1.33)	1.38 (1.24,1.53)
Indian & Bangladeshi^c										
No. of deaths	1136	802	825	691	721	400	272	212	131	99
HR (95% CI) ^a	1.44 (1.17,1.78)	1.29 (1.03,1.61)	1.18 (0.95,1.47)	1.04 (0.83,1.31)	1.00 (reference)	0.97 (0.74,1.26)	0.93 (0.69,1.27)	0.83 (0.59,1.17)	0.98 (0.65,1.48)	0.84 (0.53,1.33)
Jee et al^b										
No. of deaths	1015	1649	2558	3168	4340	2390	1606	1158	426	248
HR (95% CI) ^a	1.2 (1.1,1.3)	1.1 (1.0,1.1)	1.0 (1.0,1.0)	1.0 (1.0,1.1)	1.0 (reference)	1.0 (0.9,1.0)	1.0 (1.0,1.1)	1.1 (1.1,1.2)	1.2 (1.1,1.3)	1.2 (1.1,1.4)
Cancer Mortality										
East Asian										
No. of deaths	439	628	949	1194	1760	877	586	449	181	143
HR (95% CI) ^a	1.11 (0.97,1.28)	1.01 (0.91,1.12)	0.92 (0.84,1.01)	0.97 (0.89,1.06)	1.00 (reference)	1.06 (0.97,1.16)	1.06 (0.95,1.17)	1.13 (0.99,1.29)	1.12 (0.94,1.35)	1.33 (1.10,1.62)
Indian & Bangladeshi										
No. of deaths	91	76	82	70	92	47	28	23	14	7
HR (95% CI) ^a	0.92 (0.48,1.77)	0.98 (0.59,1.94)	0.96 (0.50,1.87)	0.85 (0.43,1.69)	1.00 (reference)	0.92 (0.42,2.01)	0.78 (0.30,1.97)	0.71 (0.26,1.95)	0.85 (0.25,2.94)	NA
Jee et al^b										
No. of deaths	254	496	688	978	1415	781	536	387	137	69
HR (95% CI) ^a	1.0 (0.9,1.1)	1.0 (0.9,1.1)	0.8 (0.7,0.9)	0.9 (0.9,1.0)	1.0 (reference)	1.0 (0.9,1.1)	1.1 (1.0,1.2)	1.2 (1.1,1.3)	1.2 (1.0,1.4)	1.2 (1.0,1.6)
CVD Mortality										
East Asian										
No. of deaths	758	828	1041	1172	1702	757	553	432	242	192
HR (95% CI) ^a	1.37 (1.20,1.56)	1.19 (0.96,1.48)	0.98 (0.86,1.11)	0.99 (0.91,1.08)	1.00 (reference)	0.94 (0.84,1.05)	0.99 (0.89,1.11)	1.00 (0.89,1.13)	1.31 (1.07,1.61)	1.43 (1.19,1.71)

Indian & Bangladeshi										
No. of deaths	341	252	301	246	276	152	106	81	54	39
HR (95% CI) ^a	1.18 (0.83,1.68)	1.07 (0.73,1.57)	1.13 (0.79,1.62)	0.98 (0.67,1.43)	1.00 (reference)	0.95 (0.62,1.47)	0.96 (0.58,1.57)	0.84 (0.48,1.45)	1.04 (0.54,1.99)	0.87 (0.42,1.83)
Jee et al ^b										
No. of deaths	189	318	595	754	1076	624	411	308	126	67
HR (95% CI) ^a	0.8 (0.7,1.0)	0.8 (0.7,0.9)	0.9 (0.8,1.0)	1.0 (0.9,1.1)	1.0 (reference)	1.0 (0.9,1.1)	1.1 (0.9,1.2)	1.2 (1.0,1.4)	1.4 (1.1,1.7)	1.4 (1.1,1.8)

Respiratory Disease Mortality

East Asian										
No. of deaths	234	205	244	240	348	110	84	60	35	30
HR (95% CI) ^a	3.14 (2.09,4.73)	1.74 (1.32,2.30)	1.38 (1.03,1.85)	1.13 (0.89,1.45)	1.00 (reference)	0.86 (0.61,1.23)	1.03 (0.69,1.52)	1.05 (0.74,1.50)	1.42 (0.95,2.13)	1.87 (1.22,2.86)
Indian & Bangladeshi										
No. of deaths	160	103	65	66	66	30	25	23	8	5
HR (95% CI) ^a	2.03 (1.07,3.87)	1.70 (0.85,3.39)	0.96 (0.45,2.05)	1.07 (0.50,2.26)	1.00 (reference)	0.81 (0.31,2.10)	0.98 (0.35,2.70)	1.07 (0.38,3.07)	NA	NA
Jee et al ^b										
No. of deaths	62	70	92	98	122	66	32	22	7	0
HR (95% CI) ^a	1.8 (1.3,2.6)	1.4 (1.0,1.9)	1.2 (0.9,1.6)	1.1 (0.8,1.4)	1.0 (reference)	1.0 (0.7,1.3)	0.8 (0.5,1.1)	0.7 (0.4,1.1)	NA	NA

^a Adjusted for age, alcohol use, and baseline comorbid conditions and excluded subjects with a BMI < 16 Kg/m² or height ≤ 130cm and subjects with < 2 years of follow-up

^b Jee SH et al. Body-mass index and mortality in Korean men and women. N Engl J Med 2006; 355:779-87

^c East Asians include Chinese, Koreans and Japanese. South Asians include Indians and Bangladeshis.

Table S8: Characteristics of Participating Cohorts in the Asia Cohort Consortium BMI Project according to availability of CHD data at baseline

Baseline CHD data ^d	No of subjects	Study entry	Years of follow-up ^a	Age at entry ^a	BMI ^a	Female (%)	Ever smokers (%)	No of deaths	Cancer death (%) ^c	CVD death (%) ^c	Other death (%) ^c
East Asia											
Not available	66,323	1985-2004	11.6	55.8	22.5 (3.1) ^b	40.1	49.1	12,049	35.3	33.4	31.3
Available	787,917	1984-2006	10.1	55.2	23.3 (3.3) ^b	55.1	36.7	84,636	34.5	34.8	30.7
India & Bangladesh											
Not available	146,820	1991-1997	5.2	50.8	22.3 (4.2) ^b	40.4	18.9	13,001	8.7	43.8	47.5
Available	140,549	1995-2002	7.4	48.4	21.6 (4.0) ^b	61.2	24.5	11,072	11.9	37.6	50.5
Total	1,141,609	1984-2006	9.2	53.9	22.9 (3.6)	53.1	33.5	120,758	29.9	35.7	34.3

^a Mean (SD) for BMI and mean for other variables.

^b BMI estimated using weight and height measured at enrollment in all South Asian cohorts. Some East Asian cohorts employed measured height and weight while other East Asian cohorts employed self-reported height and weight to obtain BMI.

^c Excluding deaths with unknown causes.

^d CHD, coronary heart disease.

Table S9. Hazard ratios (HR) for the association between BMI and total mortality by methods of BMI data collection: The Asia Cohort Consortium BMI Project (East Asians only)

Methods to obtain weight/height data	Body mass index (BMI) at baseline									
	≤15.0	15.1-17.5	17.6-20.0	20.1-22.5	22.6-25.0	25.1-27.5	27.6-30.0	30.1-32.5	32.6-35.0	35.1-50.0
All subjects^a										
Self-reported										
No. of deaths	208	2052	8444	14,176	14,802	6684	2511	845	252	151
HR (95% CI) ^b	1.95 (1.65,2.31)	1.83 (1.55,2.17)	1.37 (1.22,1.53)	1.10 (1.03,1.17)	1.00 (reference)	0.98 (0.94,1.03)	1.06 (0.99,1.13)	1.21 (1.08,1.36)	1.61 (1.33,1.95)	1.48 (1.22,1.78)
Measured										
No. of deaths	248	1743	5103	7024	6589	4325	2168	778	232	132
HR (95% CI) ^b	4.88 (1.57,15.21)	1.88 (1.59,2.23)	1.33 (1.24,1.44)	1.09 (1.03,1.17)	1.00 (reference)	0.98 (0.93,1.03)	1.08 (0.97,1.21)	1.16 (0.93,1.46)	1.32 (1.11,1.56)	1.53 (1.19,1.98)
Ever smokers^a										
Self-reported										
No. of deaths	85	1112	4977	8314	7702	3182	1036	310	78	57
HR (95% CI) ^b	1.76 (1.29,2.39)	1.76 (1.51,2.06)	1.41 (1.26,1.48)	1.14 (1.07,1.21)	1.00 (reference)	0.97 (0.92,1.02)	0.99 (0.92,1.07)	1.14 (1.00,1.31)	1.56 (1.09,2.24)	1.67 (1.22,2.26)
Measured										
No. of deaths	106	878	2613	3423	2748	1551	686	221	49	25
HR (95% CI) ^b	5.27 (1.53,18.2)	1.92 (1.51,2.45)	1.33 (1.20,1.49)	1.15 (1.07,1.22)	1.00 (reference)	0.96 (0.89,1.04)	1.05 (0.94,1.16)	1.24 (1.01,1.42)	1.20 (0.84,1.71)	1.59 (0.78,3.24)
Lifetime nonsmokers^a										
Self-reported										
No. of deaths	105	759	2808	4800	6098	2936	1237	462	142	72
HR (95% CI) ^b	2.15 (1.71,2.71)	1.75 (1.43,2.13)	1.21 (1.05,1.40)	1.00 (0.93,1.08)	1.00 (reference)	0.99 (0.91,1.09)	1.11 (1.01,1.23)	1.33 (1.12,1.59)	1.60 (1.25,2.04)	1.58 (1.09,2.28)
Measured										
No. of deaths	142	859	2472	3566	3827	2768	1476	555	183	107
HR (95% CI) ^b	3.97 (1.94,8.09)	1.72 (1.52,1.95)	1.29 (1.20,1.38)	1.05 (0.99,1.12)	1.00 (reference)	1.00 (0.94,1.08)	1.11 (0.94,1.32)	1.19 (0.96,1.47)	1.39 (1.15,1.68)	1.55 (1.22,1.97)

^a Included in the analysis were all subjects / ever smokers / lifetime nonsmokers for self-reported (398,672 / 152,718 / 217,094) and measured BMI (380,865 / 117,327 / 262,398)

^b Adjusted for age, gender, education, urban/rural resident, marital status, and baseline comorbidities and excluding subjects with less than three years of follow-up.